

**REMARKS**

Claims 1-2, 4-7, 9-12, 22, 24, 29, 20, 32-42, and 44 are rejected under 35 U.S.C. 102(e) as being anticipated by Collins III et al., Publication Number 2002/0187571 (hereinafter "Collins"). Applicants respectfully traverse the rejection.

**Claim 1 and its dependent claims****A. The Examiner states that the elements of claim 1 are inherent in Collins**

Claim 1 recites "an underfill between a first surface of the light emitting diode and a first surface of the submount, wherein the underfill has characteristics to reduce contamination of the light emitting diode by the phosphor material." In rejecting claim 1, the Examiner states:

Collins et al. teach . . . an underfill material (66, Fig. 4B) between a first surface of the light emitting diode and a first surface of the submount. Collins et al. do not expressly teach that the underfill has characteristics to reduce contamination of the light emitting diode by the phosphor material. However, it is inherent in Collins's device because the underfill of Collins comprises a same material with the present invention. Therefore, the underfill of Collins also has characteristics to reduce contamination of the light emitting diode by the phosphor material.

Layer 66 is described in paragraph [0028] as "a second insulating layer 66 . . . deposited in the gaps between anode contacts and cathode contacts and on parts of contact layer 62." Later in the same paragraph, SiO<sub>x</sub> is recited as an example of a material suitable for insulating layer 66. Since claim 10 recites that claim 1's underfill may include a filler of silicon dioxide, the Examiner argues that layer 66 inherently includes the structure of claim 1.

PATENT LAW  
GROUP LLP  
2625 N. FIRST ST.  
SUITE 223  
SAN JOSE, CA 95134  
(408) 363-0480  
FAX (408) 363-0481

**B. Collins cannot possibly inherently teach the elements of Claim 1, since****Applicants can give examples of Collins device that will not read on Claim 1**

As Applicants argued in the previous office action response, the Examiner's rejection is contrary to well-established principles of inherency. The test for inherency is set forth in MPEP section 2163.07(a), quoting *In re Robertson*: "To establish inherency, the extrinsic evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing may result from a given set of circumstances is not sufficient."

Emphasis added, citations omitted. According to the above-quoted definition of inherency, the mere recitation by Collins that SiO<sub>x</sub> may be used as Collins' insulating layer 66 does not mean that insulating layer 66 inherently has characteristics to reduce contamination of the light emitting diode by the phosphor material, because a person of skill in the art could envision embodiments of Collins' SiO<sub>x</sub> insulating layer that do not reduce contamination. For example, Collins' SiO<sub>x</sub> insulating layer 66 may contain other materials besides SiO<sub>x</sub> that encourage contamination, or may be deposited with a thickness that is incapable of reducing contamination, or over an area of structure that cannot protect the device from contamination. Since the matter in claim 1 missing from Collins, i.e. that the "underfill has characteristics to reduce contamination of the light emitting diode by the phosphor material" is not necessarily present in Collins' insulating layer 66, Collins does not inherently teach all the elements of claim 1. Claim 1 is thus allowable over Collins.

In addition, the Examiner's focus on the material forming Collins' insulating layer 66 ignores the plain language of claim 1 which states that the characteristics of the underfill reduce contamination. "Characteristics" clearly encompasses more than just material. Not every underfill layer formed of a given material will have characteristics that reduce

contamination. For example, a silicon dioxide containing underfill that completely fills the space between the diode and the submount may reduce contamination, while a silicon dioxide containing underfill that occupies only a limited space between the diode and the submount may not reduce contamination. Accordingly, the Examiner's citation of a reference that teaches only an underfill material but ignores other characteristics of the underfill clearly cannot teach all the elements of claim 1. Thus, for this additional reason, claim 1 is allowable over Collins.

**C. The Examiner has completely ignored Applicants arguments on inherency**

In the previous office action response Applicants illustrated that the Examiner's argument is contrary to the very essence of inherency: that the missing material must necessarily be present in the reference. Applicants demonstrated that Collins cannot possibly inherently teach all the elements of claim 1 by giving examples where the teachings of Collins cited by the Examiner as inherently teaching claim 1 will NOT read on claim 1. In the "Response to Arguments" section of the present office action, the Examiner ignores all of the above arguments, and simply restates "it is inherent in Collins's device because the underfill of Collins comprises a same material with the present invention." Applicants respectfully request that the Examiner respond specifically to the Applicants demonstration that Collins cannot possibly inherently teach all the elements of claim 1.

**D. Dependent claims rejected under 102**

Claims 2-15 depend from claim 1 and are therefore allowable over Collins for at least the same reason. In addition, with regard to claim 7 and 12, Applicants can find no teaching of a gettering compound in Collins. Regarding claim 7, the Examiner states "Collins et al. teach the phosphor material comprising a gettering compound, the gettering

PATENT LAW  
GROUP LLP  
2615 N. FIRST ST.  
SUITE 223  
SAN JOSE, CA 95134  
(408) 352-0460  
FAX (408) 352-0481

compound comprising a gettering ion and a counter-ion, said gettering ion comprising organic ligands. [sic]" Applicants respectfully request that the Examiner provide a citation to the portion of Collins that teaches this, as Applicants can find no such teaching in Collins. In fact, the words "gettering" and "ligand" do not appear anywhere in Collins. Regarding claim 12, the Examiner states "Collins et al. teach the underfill comprising a gettering compound, the gettering compound comprising a gettering ion and a counter-ion, said gettering ion comprising a group IVA material (silicon)." While Collins does teach the use of silicon containing compounds in many contexts, for example, SiC as a growth substrates and silicon oxide as a phosphor filler, Applicants respectfully request that the Examiner provide a citation to the portion of Collins that teaches silicon as a gettering ion in combination with a counter ion, as Applicants can find no such teaching in Collins. Claims 7 and 12 are therefore allowable for this additional reason.

#### E. Dependent claims rejected under 103

Claims 3, 8, 13, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Collins alone or over Collins in view of various other references. Collins and the present application were, at the time the present invention was made, owned or subject to an obligation of assignment to Lumileds Lighting U.S. LLC. Accordingly, under 35 U.S.C. 103(c), Collins cannot be used as a prior art reference in a 103(a) rejection. Claims 3, 8, 13, and 15 are therefore allowable over Collins and any combination of Collins and other references.

In a telephone conference on March 3, 2004, the Examiner told Applicants' undersigned attorney that Applicants must prove that Collins' status as a 103(c) reference. Applicants respectfully submit that MPEP 706.02(l)(2)II specifically states that the above paragraph, when signed by Applicants' undersigned attorney, is sufficient evidence of

PATENT LAW  
GROUP LLP  
2625 N. FIRST ST.  
SUITE 223  
SAN JOSE, CA 95128  
(408) 362-0481  
FAX (408) 362-0481

Collins' status as a 103(c) reference. Accordingly, Applicants need not furnish the proof requested by the Examiner. In particular, the MPEP section states:

Applications and references (whether patents, patent applications, patent application publications, etc.) will be considered by the examiner to be owned by, or subject to an obligation of assignment to the same person, at the time the invention was made, if the applicant(s) or an attorney or agent of record makes a statement to the effect that the application and the reference were, at the time the invention was made, owned by, or subject to an obligation of assignment to, the same person.

However, Applicants attach, as a courtesy to the Examiner, copies of assignments which assign the present application and Collins to Lumileds Lighting U.S. LLC.

#### F. Allowable claims

Applicants thank the Examiner for indicating that claims 14, 25, and 26 are allowable if amended into independent form.

#### Claim 27 and dependent claims

Independent claim 27 recites "an underfill disposed in at least a portion of a space between the semiconductor light emitting diode and the submount such that the underfill forms a physical barrier that prevents the phosphor-containing material from occupying the space." The Examiner seems to reject claims 27 as being anticipated by Collins, but the Examiner does not describe where Collins teaches the above-quote element of Claim 27. In addition, Applicants can find no such teaching in Collins. Accordingly, claim 27 is allowable over Collins. Applicants respectfully request that the Examiner provide a paragraph number for the portion of Collins that describes the above-quoted element of claim 27.

Claims 28-33 depend from claim 27 and are therefore allowable for at least the same reason. Claim 28 is rejected over Collins in view of another reference. As described above,

in section E, Collins cannot be used as an obviousness reference. In addition, with respect to claim 32, as described above in section D, Collins does not teach "a gettering compound, the gettering compound comprising a gettering ion and a counter-ion." Claim 32 is thus allowable over Collins for this additional reason. With respect to claim 33, Applicants can find no teaching or Figure in Collins that shows an underfill that "completely fills the space between the semiconductor light emitting device and the submount." For example, in the device illustrated in Fig. 4C, the space between the layers on device 10 that are attached to structure 52 is clearly NOT occupied by material 66, which the Examiner has called an underfill in rejections of other claims. Accordingly, claim 33 is allowable for this additional reason.

#### Claim 34 and dependent claims

Claim 34 recites "a gettering compound comprising a gettering ion and a counter-ion, the gettering compound positioned to prevent the phosphor-containing material from contaminating the semiconductor light emitting device." As described above in section D, Applicants can find no such teaching in Collins. Accordingly, claim 34 is allowable over Collins. Claims 35-44 depend from claim 34 and are therefore allowable for at least the same reason.

Applicants thank the Examiner for indicating that claim 43 is allowable if rewritten in independent form.

#### Conclusion

In view of the above arguments, Applicants respectfully request allowance of claims 1-15 and 22-44. Should the Examiner have any questions, the Examiner is invited to call the

undersigned at (408) 382-0480.

Certification of Facsimile Transmission

I hereby certify that this paper is being facsimile transmitted to the U.S. Patent and Trademark Office on the date shown below.

R. Leiterman  
Signature

3/10/04  
Date

Respectfully submitted,



Rachel V. Leiterman  
Attorney for Applicants  
Reg. No. 46,868

PATENT LAW  
GROUP LLP  
2635 N. FIRST ST.  
SUITE 223  
SAN JOSE, CA 95134  
(408) 382-0480  
FAX (408) 382-0481